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BATH, CONTREXÉVILLE
AND THE
LIME SULPHATED WATERS



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LIME SULPHATED WATERS

WITH

THEIR USE IN MEDICINE

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“ πρὸς ποικίλας νόσους, καὶ πίνουσι καὶ ἐγκαθιμένοις
ὕγινα.”—Strabo.

PREFACE.



It has been thought worth while to print these notes, because they refer to a group of waters, the Lime Sulphated Earthy ones, which are probably not so well-known in England, as some others are.

A few words have been added about another class of lime waters, containing a good deal of carbonate of lime, such as those of Wildungen and some Table waters.

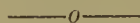
Further, to make clear the relations of these waters to the true alkaline ones, a few analytical tables of sodaic carbonated waters have been included.

An examination of the whole subject, has naturally led to some suggestions about the use of the Bath and Bristol waters.

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BATH, CONTREXÉVILLE, AND THE LIME SULPHATED WATERS.

CHAPTER I.

“The calcareous or petrifying waters have the most ancient reputation in such affections. Next come the acidulous ones, which have the highest power in cleansing the renal and vesical passages, such as the Italian and German waters, which are used by all as diet drinks.”—BACCI, DE THERMIS, 1571.

WHOEVER has been at the trouble of reading the above quotation, will be tempted to exclaim. Why, what uniformity there is in medical practice! A physician of the present day, like the old Roman doctor, might very possibly say to his patient, “Drink one of the table waters at home, and go to a foreign lime-water.”

Nevertheless, when we survey the history of mineral waters, we discover quite as wonderful changes in their employment, as in the exhibition of ordinary medicines.

It is not a little surprising to find that patients suffering from certain diseases of the urinary and of

the respiratory organs, which were frequent subjects of treatment less than a century ago at our earthy sulphated waters of Bath and of Bristol, are no longer sent to either of these places, while they are still sent to many of the old sulphated waters, and especially to the more modern ones of the same class, Contrexéville, Lippspringe, and Vittel. At the same time we find, that in certain cutaneous affections the waters of Bath and the similar ones of Leuk are employed as much now as formerly. These and numberless analogous cases naturally suggest many curious points for consideration.

After we accept the facts of cures effected under ordinary internal medical treatment, there is frequently a difficulty in determining with certainty, what has been in reality the curative agent, and what the nature of its operation: and this is still greater in the case of the curative effects of mineral waters, especially when their solid constituents are presumed to be inert, or nearly so, either from their nature, or owing to the small quantity in which they are present. It is not by any means easy to satisfy oneself as to how much is due to the waters themselves, how much to change of air and to bath life, and in some instances how much to the skill and experience of the bath physicians, in the treatment of certain special diseases.

We see our way tolerably plainly, when waters are frankly alkaline, frankly aperient, or frankly chalybeate. In such cases we at least think that we can understand

the cause of the production of favourable results. But in cures with the waters, on the investigation of which I am about to enter, the cause of success is not so patent. I intend to treat as much as possible only of the internal use of the earthy waters, as in these days when cutaneous absorption is not believed in, it is solely by their internal use that we can study the action of the constituents of mineral waters, (excluding the effects of baths and various bath processes with mineral waters of differing temperatures). I say as much as possible, because although the practice varies at different periods, still at the present day there are few mineral waters, especially if they are thermal, which are not used for both drinking and bathing purposes. At one time such waters have been used only internally, at another time only externally, and without any reasonable explanation of the grounds for the difference of practice.

In order to show the relations of the waters, of which we are about to treat, to other ones, it is necessary to say something about alkaline waters. These are somewhat multifarious, but are usually divided into :—

1. Pure, *i.e.*, comparatively pure alkalines, in which carbonate of soda with carbonic acid predominates, such as Vichy, Vals, with the important subdivisions of :—*a.* Chloride of sodium alkalines, as Ems, Luthatschowitz, etc. *b.* Sulphate of sodium alkalines, as Carlsbad, Tarasp, etc.

2. Mixed alkalines, in which carbonate of lime or of magnesia predominates, often with some carbonate of soda, and almost always with a large supply of carbonic acid, such as the waters of Wildungen, Pougues, etc. Many of the table waters, especially of the French ones, come under this head.

3. Sulphated alkalines, the earthy waters, in which sulphate of lime is the most prominent constituent, with a little carbonate of lime and small quantities of sulphate of soda or of magnesia, or of their chlorides. The amount of carbonic acid present is comparatively small; such are Contrexéville, Bath, Bagnères de Bigorre.

This last is the class of waters now to be considered. It is on the whole a much smaller, less known and less popular class of waters than the highly carbonated ones, which have in all ages been found grateful to the palate.

Although they do not come directly within the scope of this enquiry, yet they always have been and continue to be so popular in the treatment of many of the diseases for which the sulphated waters are employed, that I have prepared a few skeleton tables of the constituents of some of the chief alkaline springs. It is common to speak of the sulphated lime waters as alkaline, and so they are in a certain sense, but they are very different from the true alkaline waters with their large amount of carbonate of soda and of carbonic acid.

All these waters are useful in dyspepsia, and in the uric acid diathesis, especially when they are not artificially overloaded with carbonic acid. I am aware that some authorities rather dread their use in certain affections, but they seem to me scarcely to have made out a case for the abandonment of such pleasant remedies.

I have thought it unnecessary to give a table of the ordinary acidulous sodaic waters. They resemble each other closely, and are well known as Seltzers, Heppingen, and its neighbour Apollinaris, Roisdorf, Wilhelmsquelle, Gieshübel, but their number is legion in various districts of France, Germany, and Italy. They have been time out of mind, and are now, used as common drink by the villagers, and at table d'hôtes mixed with wine. There is no reason whatever why the old Seltzers water, which has been imported into England for at least 130 years, should not be as popular as ever.

I have given the analysis of a few of the French table waters because like Schwalheim* (German) they contain lime as a carbonate, and are so far akin to sulphate of lime waters, which usually possess a little carbonate of that substance. These tables, which give grammes in the litre, indicate the chief constituents of the waters. Very minute analyses fatigue the eye with details, and do not convey any very distinct idea to non-professional or even to professional readers.

* Schwalheim was probably known to the Romans. It and Seltzers and Wilhelmsquelle, were described in 1565-81.

It is often difficult to assign a water positively to one of our artificial classes. Thus Tönnistein owing to its chloride of sodium stands among muriated alkalines, and owing to its carbonate of lime and of magnesia, among the mixed alkalines.

ALKALINES.

	Vals, V. G.	Bilin, S.	Fachingen, M.	Vichy, G. G.
Bicarb. Soda	7·28	4·29	3·57	4·88
Chloride Sodium	·160	·382	·63	·530
Sulphate Soda	·235	·816	...	·290
Bicarbon. Magnesia	·672	·218	·575	·303
„ Lime	·520	·579	·625	·434
„ Potass. ... ..	...	...	...	·352
„ Strontium ... ..	...	...	...	·303
Phosphate Soda ... ..	...	...	...	·130
Total Solids	9·24	6·47	5·55	7·306

N.B. Bilin and Fachingen, especially the first, contain a little iron. Vals has none. Vichy scarcely any.

MURIATIC ALKALINES.

		Luhatscowitz, J.	Gleichenberg, C.	Tönnistein.	Ems, K.	Royat, E.
Bicarb. Soda ...	...	4·28	3·55	2·57	1·97	1·34
Chloride Sodium ...	...	3·06	1·85	1·41	·98	1·7
Bicarb. Magnesia ...	...	·083	·722	1·63	·206	·67
„ Lime ...	...	·878	·5	·55	·216	·1
Chloride Potass. ...	...	·233	...	...	...	...
Sulphate Soda ...	...	...	...	·14	...	·18
Bicarb. Potass. ...	...	...	...	...	...	·435
Total Solids ...	...	8·70	6·87	6·49	3·51	·55

N.B. All these alkalines contain some iron, Gleichenberg very little, Tönnistein a good deal, as well as an unusual quantity of carbonate of magnesia.

ALKALINE SULPHATED.

		Marienbad, F.	Franzensbad, S.	Elster, S.	Carlsbad, S.	Taras, E.
Bicarb. Soda ...	...	1·82	·958	·905	1·92	5·01
Sulphate Soda ...	...	5·04	2·8	6·36	2·37	2·15
Chloride Sodium ...	...	2·00	1·14	1·62	1·0	3·82
Carbon. Lime ...	...	·78	·26	·11	·428	·233
Carbon. Magnesia ...	...	·688	·15	·11	...	·87
Sulphate Potass. .	...	...	...	...	·163	·39
Total Solids ...	...	10·6	5·40	9·26	6·19	14·9

N.B. Marienbad is the only one with any quantity of lime. Most have a good deal of iron, Carlsbad least. Tarasp has most carbouate of soda; next Carlsbad and Marienbad, Franzensbad and Elster least.

MIXED BICARBONATED LIME WATERS.

	Wildungen, V. G.	Wildungen, H.	Tönnistein.	St. Galmier, B.	Chatel Guyon, D.	Chateldon.	Condillac, A.	Rippoldsau, W.
Bicarb. Calcium	·712	1·26	·55	1·02	2·10	1·42	1·35	1·45
„ Magnesia	·535	1·36	1·63	·42	0·44	·367	...	·104
„ Soda	·664	·545	2·57	·56	·955	·629	·16	...
Chlor. Sodium	...	1·043	1·41	·48?	1·6	...	·053	...
Snlph. Soda	...	...	...	...	...	...	·175	1·05
„ Magnesia	...	...	...	...	...	...	...	·18
Chlor. Magnesia	...	...	...	...	1·218	...	...	...
Bicarb. Iron	·021	·018	·02	...	·054	...	·010	·12
Total Contents	1·46	4·6	6·49	2·88	7·2	2·52	2·19	3·21

N.B. Rippoldsau, although it has a good supply of bicarbonate of lime, is distinguished by its large supply of sulphate of soda. Wildungen H is so by its large supply of chloride of sodium. Tönnistein eclipses it by its supply of carbonate of soda. Most of these waters have some carbonate of iron, Rippoldsau a considerable snpply.

The sulphated waters selected for our consideration are twelve in number. Contrexéville and Vittel in the Vosges, Bagnères de Bigorre in the Pyrenees, Baden, Weissenburg, and Leuk, in Switzerland, St. Giuliano

close to Pisa (almost identical in properties with Lucca) in Italy, Lippspringe in Germany, and Bath and Bristol in England. I also, not with strict propriety, include the Herster well at Driburg, because, although it contains more carbonate than sulphate of lime, and has a great deal of carbonic acid, yet it has no carbonate of soda, and is essentially a lime water. It would have complicated the subject, if I had included in my survey a considerable number of the French calcareous sulphates, as Audinac, Aulus, Capvern, Crausac, Encausse, etc., and they are little known comparatively speaking. Chianciano in the Sienna district, a very well-known bath, but scarcely visited by English, would have been more worthy of notice. I was much inclined to take in the very ancient baths of Albula near Rome, but must exclude them on account of their hydro-sulphuric acid; besides they have a little lithia and boracic acid, to which some would attribute importance.

Many of the waters under discussion have had a world-wide reputation for centuries,* as Pisa and Lucca, Baden and Bath. No doubt a portion of their popularity as well as of their efficacy is due to their ther-mality. Indeed, Contrexéville and Vittel are the only ones of them, the temperature of which is not above the normal. (*See Table, p. 20*).

* Indeed, Albula, Baden, Bath, Bagnères de Bigorre, Pisa, were all used by the Romans; Lucca, Leuk, Tönnistein, Wildungen, Rippoldsau, Weissenburg, Driburg, and Bristol, were well known in or before 1650. Contrexéville, Lippspringe, and Vittel are of comparatively modern origin.

CHAPTER II.

“Let those who, with upraised eyebrows, despise simplicity of practice in chronic diseases, consider how many and how different affections are cured by the use of baths and of mineral waters, the value of which has been tested by a series of ages. Invalids, who have tried all the most extolled remedies without benefit, are found to fly to them for aid.” BOERHAAVE, *Praelections*.

HAVING now got some general ideas about alkaline waters, we pass on to the sulphated ones. The present popularity of Contrexéville and, though in a lesser degree, of Vittel and of Weissenburg, in the treatment of certain affections has led me to enquire whether there is anything special in their composition, and whether similar waters have been or are now employed in an analogous manner. I say similar waters, for the practice is not yet extinct, of comparing wells of dissimilar composition, and then of inferring the necessary superiority of the water, that is most highly mineralised. For instance, the 17·96 grs. in the pint of the Bath waters have been favourably contrasted with the 2·00 grs. of Plombières. Such comparisons are of no value.

For this purpose I have, as I have already said, selected a few typical waters, with all of which I am acquainted, not that ordinary visits to baths convey any very accurate information, because they are usually too short, and because the visitor is very much in the

hands of the courteous bath doctor, who probably sets a higher value on his waters than others do, and whose statements the passing visitor is scarcely prepared to question.

I shall first enquire how far waters of this class have been employed in former times, or are employed now in the treatment of diseases, which profess to be managed successfully at Contrexéville or Weissenburg ; and in following this enquiry, it must be remembered, that the use of mineral waters, as of ordinary medicines, varies in every age, and that if you take any particular water, you will find that in one age it is a popular remedy, while in another it is ignored in the treatment of particular maladies, and that it is at one time employed in large, in another in very small quantities. We shall also find that one of our difficulties in attempting to explain rationally the action of mineral waters is caused by the immense variety of the maladies for which they have at different times been applied. Their enthusiastic advocates have been far too apt to regard them as panaceas, or in the opposite direction to create and to press their special use and to proclaim their specific virtues.

We shall now pass in review the cures effected at the various baths which we have enumerated. We can only view the subject generally and not go into details.

The following list of diseases treated with sulphated waters has been compiled from many sources, and it is a mere dry enumeration, which must be fatiguing to the reader, I fear.

The diseases in which *Contrexéville* waters are most employed at present, are gout, particularly in its atonic forms; affections of the urinary organs, especially when the urine is alkaline; gravel, renal or vesical, notably (in which case many authorities consider sodaic water, such as Vichy, absolutely injurious) when phosphate or oxalates are present; vesical catarrh; nocturnal incontinence of urine; to some extent sterility; dyspepsia; obstruction of the liver, particularly when complicated with gall-stones; and diabetes.*

The reports from *Vittel*, which is close to *Contrexéville*, are very similar. Its waters are useful in gravel, especially in phosphatic and oxalic; of much use in dyspepsia, constipation, engorgement of the liver. Dr. Bouloumié remarks judiciously, that biliary calculi which occur oftenest in women, on account of their tendency to constipation, are naturally removed by the more laxative of the waters of the place, which, he further sensibly adds, have given no results in diabetes.

The waters of *Bagnères de Bigorre* are used in jaundice and inaction of the liver, in catarrhs of the bladder, and of the respiratory organs, in dyspepsia and chronic diarrhœa, in diabetes and skin affections.

The springs at *Baden* in Switzerland have been for

* Their efficacy in these complaints is vouched for by Dr. Debout D'Estrées, by Dr. Cruise of Dublin, and by others, and to a certain extent by Durand-Fardel, to whose excellent treatise on mineral waters I acknowledge my great obligations.

centuries, and still are used in gout, and its effects, in gravel, in catarrhs of the stomach, of the bladder, of the bronchial tubes, and of the vagina, and have had a name in sterility, naturally an uncertain one. The great Paracelsus said that its waters removed obstructions of the Tartar, and prevented the generation of stone.

Cutaneous affections have long been the speciality of *Leuk*, but its waters have been employed in some stages of consumption (at present they are not recommended in tuberculosis), and in bronchial catarrhs, also in gout, vesical and vaginal catarrhs, and in sterility.

The waters of *Weissenburg* are at present employed in pulmonary affections, especially in bronchial catarrhs, but they are also used in vesical catarrh, chronic enlargements of the liver, and some skin complaints.

The treatment at *Lippspringe* is devoted to early stages of phthisis and bronchial affections, but the drinking cure here is of secondary importance, as compared with that by inhalations, &c. I find that at one time it was used in vesical affections.

At *St. Giuliano* near Pisa the waters have been drunk for centuries. Those of the spring *Pozetta* are used in dyspepsia, in gravel, calculi, and affections of the bladder; they have had a great name in diabetes, and a still greater one in sterility.

The kindred waters of *Lucca* produce similar effects, and engorgement of the liver and asthma have met with cures at both places. Baths are an important part of the treatment both at Pisa and Lucca.

For reasons that will presently be apparent, I treat not quite so briefly, chiefly in the way of quotation, of our own Bath and Bristol, and here I must acknowledge my obligations to the learned work of Dr. Sutherland in 1764 on these waters, as well as to my friend Dr. Spender's excellent book on Bath.

The virtues of *Bath* waters, as summarised about 120 years ago, were in dyspepsia and disordered stomach after a London season, and in gout. "They were of great use in disorders of the urinary organs, particularly sharpness of the urine, gravel and ulcer of the bladder; in jaundice, especially with an obstruction of the gall bladder, and stones generated therein;" in diabetes, for which they were recommended by Guidott in 1679; in diseases of the chest, and in asthma. Cheyne in 1720, says they were still very properly recommended in sterility. Diarrhœa in patients broken down by tropical disease was occasionally treated, and with success.

Bristol waters were used in "consumption of the lungs, also in obstructions of the urinary passages from gravel, in ulcer of the bladder, and in curing the diabetes." "Such is the force of fashion, that diabetes,*

* It was not only local practitioners who believed in the diabetic cures of Bristol—Sauvages, Cocchi, Allen, Harris, &c., had full faith in them. Allen in his "Synopsis" (1719) said: "Ad diabetem præ omnibus faciunt, circa praxin modernam, aquæ calidæ Bristolenses." Harris in his "Diseases of Children" (1698), besides praising the Bristol ones, said that mineral waters were quite as useful for the young as for the old, that they cured local weaknesses, or as

dysuria, gravel, stone and other diseases of the urinary passages, are by universal consent sent to Bristol (rather than to Bath in 1760). If Bristol waters fail, patients are given up as incurable." This applied to pulmonary affections also.

All these cures might be supported by cases detailed after the old fashion, by Guidott, Pearse, Oliver Sutherland, Carrick, for Bath and Bristol, and by Cocchi for Pisa, &c. Though their phraseology is quaint, they are just as good witnesses as to facts, as more modern authors.

It has been asked whether the cures effected at all these places have been lasting, whether waters can permanently influence a diathesis, for instance, as Paracelsus thought, prevent the generation of stone. For the present we must be satisfied with the fact that they give great relief for longer or shorter periods. Many bath doctors are, however, confident that they can modify a diathesis. But systematic diet and bath treatment for many seasons are required to produce such a result, and even then it is doubtful.

It may be convenient to draw out a scheme of the characteristic diseases, which we have seen, were or are treated at the various earthy sulphated waters.

Bacci says, the *improvisa per noctem emictio*, or incontinence of Contrexéville. A poet sang thus of the Bristol Hot Well:

. . . . "Thee the meagre fiend
Consumption flies, and cheeks his rattling cough;
But chief the dread disease, whose watery power,
Curbed by thy wave restraining, knows its bounds," &c.

Pulmonary affections (including tuberculosis and rachitis).	{ Lippspringe, Weissenburg, Leuk, B. de Bigorre, Pisa, Baden S., Bath, Bristol.
Urinary affections . . .	{ Contrexéville, Vittel, B. Bigorre, Leuk, Pisa, Bath, Bristol.
Affections of stomach and intestines . . .	{ Vittel, B. Bigorre, Contrexéville, Pisa, Bath, Bristol.
Biliary affections . . .	{ Weissenburg, Contrexéville, Vit- tel, Pisa, B. Bigorre, Bath, Bristol.
Gouty affections . . .	{ Contrexéville, Vittel, Baden, B. Bigorre, Leuk, Pisa, Bath.
Diabetes	{ Contrexéville, B. Bigorre, Pisa, Bath, Bristol.
Cutaneous affections.	{ Bath, Leuk, Weissenburg, B. Bigorre.
Sterility	{ Pisa, Baden, Contrexéville, Leuk, B. Bigorre, Bath (thermals generally).

We thus find, after making fair allowance for the tendency of bath doctors to make panaceas of their waters, that in all ages these sulphated waters have been held to be useful in certain special complaints. This cannot be attributed to mere accident or coincidence. Such collective agreement in the experience of different ages in the use of waters of the same class, is the more striking, when we recollect that in those days of difficult communication, one bath could learn little of what was doing at another one.

This application of them, we find, has been met with, whether the amount of sulphates present in them was fair (it never was really considerable), or was almost minimal, whether the spring was hot or cold, whether it was situated at the level of the sea, or 4,500 feet above it. These earthy sulphated waters, be it remembered, even the strongest of those we have included in our list, not being richer in mineral constituents, than many drinking waters which are in common use, although they may be found fault with for being "hard."

CHAPTER III.

“No test of mineral waters can be found, except the power which they exercise in curing diseases. By their fruits you shall know their nature and qualities.”—PARACELUS.

THE accompanying table will show sufficiently the main constituents of some of the chief sulphated waters. The analyses are taken as far as possible from the most recent sources, such as Durand-Fardel, and are accurate enough for our purpose of giving a comparative view of these waters. Fortunately we are not obliged to complicate the matter, by introducing minimal quantities found in some of these waters, of lithia, or of bromine and iodine, or even of arsenic (of which there may be a trace in the waters of B. Bigorre), both because their amount in these waters is so minute, and as most writers are agreed, because they do not occur in any waters, certainly not in these, in what may be called medicinal amount. We need not trouble ourselves much about the amount of carbonic acid, which is never very great, or the large amount of nitrogen which is present in some of these waters. We have purposely excluded sulphated waters having any amount of hydro-sulphuric acid, though Baden has a very little.

TABLE OF SULPHATED LIME WATER.

	Contrexéville, P.	Vittel, G. S.	B. Bigorre, R. Temp. 123°.	Leuk, R. Temp. 123°.	Wissenburg. Temp. 75° to 80°.	Lipp Springs, A. Temp. 70°.	Herster.	Baden, S. Temp. 119° to 124°.	Lucca, A. V. Temp. 116°.	Pisa, No. 9. Temp. 128°.	Bath, K. Temp. 119°.	Bristol. Temp. 75°.
Sulphate of Lime ...	1.165	1.42	1.68	1.52	.95	.8	1.15	1.4	1.102	1.136	1.14	.19
Bicarbonate of Lime ...	.402	.318	.266	...	.039	.6	1.5	.33	.010	.350	.126	.28
Bicarbonate of Iron ...	.007	...	.080	.010	?	.014	.040	...	?	?	.010	...
Sulphate of Soda ...	.236	...	.19	.05	.029	.8	...	.29	1.07	.435	.274	.19
Sulphate of Magnesia ...	.030	.821	.20	.308	.293	...	...	.318	...	...	.18	.015
Chloride of Sodium ...	.004	.015	.062	...	.065	.033	...	1.69	.184	...	.180	.091
Chloride of Magnesia ...	...	...	.132	...	...	...	.813	...	.138	.185	.208	.037
Total Solids...	1.984	2.35	2.75	1.98	1.39?	2.4	3.76	4.35	2.51	2.35	2.061	.75

No doubt in some of these waters there is carbonic acid enough to be an adjuvant, as slightly diuretic, and stimulating digestion; but its amount is far inferior to what is usually found in sodaic carbonated waters. Before proceeding to examine the solid constituents of these waters as disclosed by chemical analysis, it may perhaps be well to say something on the question of the solvent power in calculus of water generally, as one of the most prominent attributes ascribed to these waters, is their solvent power.

It has in all ages been desired to find some agent that would dissolve concretions and aid their passage. 1. The oldest remedy employed was the free drinking of water. Both Galen and Aëtius record cases in which renal calculi were dissolved, or believed to be so, and passed, by drinking large and frequent draughts of cold water. No doubt the quantity of water drunk is a strong factor in the cure by mineral waters, and this is almost the only way in which we can understand how the Bristol waters, though of only one-third the strength of the Bath ones, were considered more efficacious in gravel than the latter, and how the scarcely mineralised waters of Evian, on the Lake of Geneva, are said often to replace in their action those of Contrexéville.

2. Lime waters were early favourites. It is not easy to see the rationale of it; but there was an ancient belief that petrifying waters, or those which deposit lime, are able to dissolve stone. It was on this account

that the Albula waters were considered by the Romans to be such excellent solvents, and that Nero actually had them brought into his sumptuous baths, a distance of some fifteen miles. The petrifying "dripping well" of Knaresborough had a similar reputation. On this notion of the efficacy of lime, lobster and oyster shells, and coral, and Mrs. Stephens' and other quack remedies were popular, and Dr. Whytt an eminent Edinburgh authority in the last century, wrote an elaborate if not a very convincing work on the value of lime water as a solvent in gravel, with his views supported by a few cases. Mineral waters used as solvents, were drunk in very large quantities, and baths were thought less important, particularly if the waters were cold.

3. Perhaps the next most popular class of waters in such affections was that of the acidulous ones—that is, of waters charged with carbonic acid and carbonate of soda, or carbonate of lime, and often with some iron. These have always held their ground, and some of them have been named above among the table waters.

The old very popular remedy mentioned by Mr. Boyle in 1679, Castille soap, comes under this head of alkalis.

4. But iron waters used often to be popular. Galen considered waters with a trace of iron in them, useful in diseases of the kidneys. In the early ages certain iron waters were called "*vesicariæ*," and up to a century ago it was the correct practice in England, and indeed abroad, to send patients with renal or vesical affections to Spa, or to Tunbridge Wells. It is hard to suppose that

those waters with slight mineralisation, except iron, could have been very efficacious. Of course there was always an ample supply of carbonic acid at Spa. Other favourite iron waters in gravel, as Pyrmont, Driburg, Wildungen, Rippoldsau, had, besides their iron, a good supply of earthy salts, as well as an abundant one of carbonic acid. Some think the presence of iron in waters in these cases the reverse of beneficial, but I doubt whether on sufficient grounds.

Nor can our modern knowledge of agents capable of dissolving concretions, whether urinary or bilious (for it is not easy to differentiate the treatment of the two), be considered satisfactory.

Probably increased drinking of water, and so emulging the passages, is almost the only measure, the value of which is now generally acknowledged. Apparently something may be done by the steady application of electricity, a very troublesome process. A certain amount of dissolving power is usually credited to carbonic acid and to soda and lime waters. According to a recent high authority, Dr. Dickinson, it seems to be certain that lime water has considerable power of dissolving stones outside the body, and if it could reach the kidneys unaltered, it would be a good solvent of uric acid. Potass and lithia and boracic acid are undoubted solvents, but they occur in too small a quantity in mineral waters to be of any real use for such purposes. Practically we know of no solvent for stone in the bladder. Leaving the problem unsolved, we come next to what little is really

known of the action of the mineral constituents of sulphated waters on the system.

By a reference to the table, p. 20, it will be seen that the total amount of solids is small, say 2·4 grammes in the litre on an average.

The chief amount is sulphate of lime or gypsum, which was once popularly believed to be a poison. Its average amount is just over 1 gramme in the litre. It is usually considered to be inert as to action on the general system, as it passes through the bowels unaltered, but to act as a slight astringent on the surfaces with which it comes in contact. Dr. Debout D'Estrées from certain experiments on dogs, believes that it stimulates the contractility of the urinary and biliary passages and bladder. Next come small quantities, about 21 gr., of carbonate of lime. It is not much more active than the sulphate, most of it when swallowed reappearing in the fæces as carbonate, a little as lactate or phosphate of lime, but it is antacid, and the internal use of lime renders the urine alkaline.

An impartial critic, Lersch, thus sums up :

“On the whole, experience would seem to show that besides the acid controlling power of the carbonate of lime, we may from it and the sulphate expect the checking of excessive secretion from the mucous surfaces, along with possibly increased secretion from the kidneys.”

Among the constituents, small quantities of sulphate of soda and of magnesia follow, which occasionally are

sufficient to be laxative. Lucca and Lippspringe have most soda, Vittel most magnesia.

The quantity of chloride of magnesia is small, so also is that of chloride of sodium, Baden in Switzerland having a little more of the latter than most wells.

Curiously enough, with reference to that metal having been so long a favourite in lithiasis, and for that matter in phthisis, a certain, often a very small, amount of bicarbonate of iron is to be found in most of these waters: as to its physiological action, there is some slight evidence that it may increase diuresis, if so acting on the contractility of the bladder as lime has been supposed to do. Iron waters have been used in diabetes and in albuminuria.

To sum up the general action of these waters employed internally, as they appeared to those who used them in practice, we find that in the last century a Bath doctor (1772) regarded them as stimulant, diuretic, astringent, under certain circumstances laxative, while a modern French doctor describes his waters as stimulant, diuretic, laxative, and reconstituent or tonic.

These powers in a great variety of diseases no doubt have been attested by a succession of observant physicians; still the rationale of this remains obscure. To take a particular operation, with which it is usually credited, a rather inert remedy is found to be beneficial in catarrhs of the respiratory organs, of the bile ducts, and of the kidneys and bladder; this we doubtfully explain by its astringent action on mucous surfaces,

and then superadd a contractile and expulsive power in cases of urinary or biliary concretions; a somewhat lame and impotent conclusion !

Does this examination of the minute constituents of sulphated waters enable us to explain in any really satisfactory way their successful application for centuries in the treatment of such a number of diseases, as we have found them to be employed in ? Certainly not. Are we on that account to deny the cures ? Undoubtedly not. We do not question the cures of Buxton, of Plombières, or of Teplitz, in various complaints, where the waters have the feeblest of feeble mineralisation. Are we like some German critics, in these cases to see nothing beyond the operation of mere hot water, or to have the faith of a French physician who hopes to combat cholera with his bath waters ? We do not reject these cures because we cannot explain them, but must say with the sagacious Bacci, that “such cures are a matter of experience, and that after all we cannot say much more of the effects of many ordinary medicines.”

But then to account for undoubted curative results, we must add up other influences which bear on all mineral water cures. There is the change of scene and climate and mode of life common to all baths. There is a greater consumption of water, and the waters of most of the sulphated springs we have noticed are warm, and warm water taken internally is by no means an unimportant agent in various affections, and is used at many watering places as well as in

private practice in catarrhal affections of the lungs and other organs, with undoubted advantage.*

There are also bathing and various bath processes. Warm baths are very important agents in renal and vesical affections as well as in various intestinal ones, and in rheumatism, and gout. Whatever opinion one may really have of their efficacy, inhalations of nitrogen are used at many of these baths, and also the probably more effective inhalation of vapour, in affections of the fauces, larynx and bronchial tubes. All these influences added to the action of the mineral constituents of the sulphated water may perhaps make the total result of benefit somewhat more intelligible. These waters may at least get the negative praise of not being likely ever to do the harm which strongly aperient or highly carbonated waters may do, if carelessly used; and negative praise in the practice of medicine is not always to be despised; the "*ne quid nimis*" is more in fashion now than it was fifty years ago.

* See "Internal use of Hot and Cold Water," *Baths and Wells of Europe*.

CHAPTER IV.

“Are not Abana and Pharpar, rivers of Damaseus, better than all the waters of Israel? Can I not wash in them and be clean?” II. KINGS, v., 12.

WE have no truly carbonated wells in England that can compete with foreign ones, but in Bath we have a sulphated one which is not excelled by any water of the same kind on the Continent.

WE are re-awakening to a sense of this, and Bath waters are again in repute. They are chiefly used in gout, which is now reckoned more proteiform than ever, in rheumatism, thickened joints, neuroses, some paralyses and skin affections. But a great many other complaints are treated successfully now at foreign sulphated waters, and were so formerly at Bath.

At the present moment one of the most popular waters of this class abroad is Contrexéville, and it so happens, as will appear on looking at this table, that there is a most striking analogy between the waters of Contrexéville and those of Bath, and this not only in mineral constituents, but also in the amount of carbonic acid present, in which, however, Contrexéville has somewhat the advantage. The same exciting or stimulating effect is ascribed to the excessive drinking of both.

	Contrexéville.	Bath.
Sulphate of lime	1·165	1·140
Bicarbonate of lime . . .	·402	·126
Bicarbonate of iron . . .	·007	·010
Sulphate of soda	·236	·274
Sulphate of magnesia . .	·020	·186
Chloride of sodium . . .	·004	·180
Chloride of magnesia . .	·11	·208
Totals . .	1·984	2·061

Contrexéville is a sovereign remedy in concretions, whether biliary or urinary, as we have seen above. We also have seen how the Bath and Bristol waters used to be employed in these maladies. Why should they not be so used again? If they are used at present most advantageously in gout, why should they not be so in gravel, which is regarded as an expression of the gouty or uric acid diathesis, a state induced in the words of Cheyne, “by the union of an urinous and acid salt”?

Chemically I can see nothing in the composition of the waters at Contrexéville superior; they are inferior in thermality, (on this account probably little used in rheumatism), and every one is aware of the aid given by warm diluents and warm baths in the spasms connected with the passage of urinary or biliary calculi. Both Contrexéville and Vittel are used in engorgement of the liver, and days have been when practitioners, not of Bath, have said that its waters were the best specific “in jaundice and in induration of the liver, if taken

seasonably with due purgatives and advice," and this reminds me, that at Bath as elsewhere, the action of other, especially of aperient medicines, of whatever nature, must occasionally be called in. Bath too produced a treatise on jaundice by Corp in 1784, who recommended exercise on the chamber-horse to aid the waters.

Contrexéville and Vittel are also used with success in dyspepsia, intestinal neuralgia, and chronic diarrhœas. Why should not Bath waters be again employed in these, as they used to be "in decayed stomachs," especially when we know that such complaints are treated successfully at the hot waters of Plombières, which have hardly any mineralisation at all.

And here I may be permitted to advert at somewhat greater length, to a class of disease of the most intractable kind, which has been treated in old days at Bath, and which I have some slight evidence has been treated there successfully also of late days; I mean tropical diarrhœa.

I quote an abstract of two cases so treated, one from Guidott, about 200 years ago.

"The governor of Goree was reduced by bloody flux and fever to the greatest degree of cachexia. His flux degenerated into a lientery; his food passed through indigested. He recovered completely at Bath in the space of three months by the internal use of the waters, little assisted by medicine." Or take a still more characteristic case—one from Dr. Sutherland, 1763.

"An officer who had served at Dominique was reduced

by ague and flux, of which he was having constant relapses for some months, to a skeleton. He suffered much uneasiness from an inflammation in his mouth and tongue which reached along the bowels to the anus.

He set out for Bristol in the end of March free from ague, but having frequent and violent returns of the flux. By the use of the waters for six weeks the flux almost entirely left him.* He confined himself to a milk diet, which consisted chiefly of butter milk with broth. By this regimen and the continuance of the water, he got free of all his complaints by the end of June."

The last case with the soreness of the tongue, fauces, and intestines is very characteristic.

We have seen that the Contrexéville waters have been considered useful in diabetes, (this is accounted for on the ground of diabetes being sometimes an effect of the uric acid diathesis?), further that the Bristol ones were counted specifics. I cannot, pretend to profess confidence in either. Apparently any water that is not

* Milk in its various forms as goat whey, etc., was in those days an important element in the cure of gout, diabetes, phthisis, and especially of diarrhœas and dysenteries. The following extract from the Honourable R. Boyle (1685) is curious. "When common cow's milk had been very plentifully taken, and for a long continuance of time, and even sometimes for a time not extending to many days, fluxes and diarrhœas, and though more seldom even dysenterical ones, are happily and easily cured. This simple alimentous medicine being liberally taken, (for it should be used instead of all other drinks while the disease continues) has been very frequently found to cure fluxes not all of one sort in Ireland itself, where that kind of disease is endemic."

injurious, will at times be considered useful in this complaint. Even the imported bottles of the American Bethesda water, weaker than the Bristol one, find their admirers, just as a Gastein bath doctor assures us gravely, that the bottled water of that place has cured sea sickness on the voyage to America.

In judging of the effects of the Bristol waters, we must take into account the favourable climate of the place, the usefulness of simple warm water drinking in many catarrhal affections, and the free use of milk. Asses' milk, goats' milk, and goats' whey, and especially butter milk were all in great favour.*

We now come to another class of diseases; one which is not treated specially at Contrexéville or Vittel, but which is treated at many thermal sulphated springs, and at this moment specially at Lippspringe and at Weissenburg. We have seen how pulmonary complaints and phthisis were treated occasionally at Bath, and almost universally at Bristol Hot wells for a long series of years.

I cannot myself believe much in the effect of merely drinking sulphated waters, as at Lippspringe, Weissenburg, and Bristol, apart from the action of their warmth, (all three springs curiously enough are about the temperature of 75°). However, there is every reason to believe that any advantage to be got from the water drinking *per se*, could be obtained at Bath at least as well as at these places.

* See "Milk and its Preparations," *Baths and Wells of Europe*.

A further important part, however, of treatment at them, is the inhalation of moist vapour, and of nitrogen and carbonic acid, a mode of treatment common abroad, but little practised in this country. This too could be managed at Bath, if the scheme of carrying out the system at Aix-les-Bains, (a place so extraordinarily popular with the English), be really acted on. The waters of Bath have already a large supply of nitrogen and a fair one of carbonic acid.

The Bath treatment is capable of much development in this direction, and I am glad to think that plans for it are under consideration.* In fact, to diverge to waters not after all so very dissimilar, for they are weak thermals with a little carbonate of soda and of lime, there is no reason why, what is called the Mont Dore cure, might not be practised at Bath. Dr. Emond, the intelligent physician who has inaugurated the cure at Bournemouth, believes that the beneficial effects are largely due to the mode of administration of baths, douches, inhalations, aspirations, and irrigations. The Mont Dore imported waters are used at Bournemouth, no doubt at a great expense, for drinking and for inhalations, but for larger matters, such as baths, chemically prepared waters are used. I think I may say that it is very certain, that

* Since this was written, Dr. Spender informs me that some chambers have been constructed on the mode of Aix, for general and local douches, with special apparatus for applying spray to the nose, throat, eyes, and ears. There is also a new chamber for a general or local vapour bath with or without medication. The massage has also been greatly improved.

for the latter purpose the naturally heated waters of Bath would answer quite as well as the artificial ones, and I would even venture to doubt whether inhalations, etc., of the Bath waters would not be just as efficacious. Both Bournemouth and Bath must fail in presenting a real Mont Dore treatment as regards identity of water. They must also fail, in another respect, in both being at the level of the sea, instead of at the altitude of over 3000 feet. Bournemouth has the advantage of being at present our favourite station for pulmonary patients, and in having sea air. Bath is rather shut in. Yet I have known asthma recover there. It can never be said to have been a favourite place for chest complaints, although the neighbouring Hot wells in their day far exceeded Bournemouth in their popularity in such cases.

To develop fully the resources of Bath for a winter residence, there should be a great establishment like that of Dax, with its covered glass colonnades. No place could be better adapted for a great winter garden. Time after time the idea has been suggested by Dr. W. B. Richardson and others of a great hospital here for soldiers broken down by wounds, rheumatism, or other effects of service.

I would further make one general observation on the drinking of Bath water. I have little doubt that to be efficacious in the diseases treated at Contrexéville, Vittel, and Wildungen, their great rival in urinary affections, the waters must be drunk in larger quantities

than is usual at present. Dr. Cheyne (1753) in the middle of last century, complained of the quantity being too great, and proposed a modicum of five pints daily, while Dr. Falconer (1782), a little later in that century, thought the doses of one to three pints in some cases too small. I confess that I agree with the latter, and I am glad to find that I am supported in this by Dr. Spender. No one recommends the enormous draughts which once were taken.

A word about the exportation of Bath waters. Those of Contrexéville and of Vittel are largely exported, and their efficacy is vouched for by many competent men. I do not myself have much faith in them, although I do not question the total effects of the treatment at those places. We have seen how closely the Bath and Contrexéville are allied in chemical composition; why should not the Bath waters when exported be as efficient as those of the latter places? We know that in former times the Bath and Bristol waters were exported and sent in large quantities to India and to the Colonies. "Witness (1700) the prodigious quantities sent daily away to Scotland and Ireland, and many other parts." They were constantly prescribed in English practice, both as table waters are now, and also as convenient vehicles for medicine. The waters are now bottled and exported, but there is no reason why their sale should not be greatly extended, as they are furnished with an ample supply of carbonic acid, which makes the waters pleasanter to the taste. Medical opinion will of course

vary as to the value of waters drunk in small quantities at home, as compared with their free use at the springs. "They are of much more efficacy drunk hot at the place than sent abroad." This was the old opinion.

Dr. Debout D'Estrées talking of the Contrexéville water, says very judiciously, "I need scarcely add that this water like all other mineral waters is more active on the spot, than when drunk at home. The effects produced by drinking the waters on the spot, by the baths, by the douches, and by the external treatment are incomparably more marked. Drunk at home, the waters often produce an amelioration, but it is only at Contrexéville that one produces the cures for which the waters drunk at home have been a preparation."

Before leaving this part of the subject I would add that I have no wish to dogmatise or to appear presumptuous, in giving advice to my medical brethren in Bath, who have all the practical knowledge of the use of their waters, which I have not. Still these conclusions have been forced on me by a study of similar waters, and by the consideration that what has been once in Bath, may be again. If we are satisfied as to the reality of the cures effected now at Contrexéville and similar baths, we cannot question the same of the cures of similar diseases at Bath and Bristol in former days, and there is no harm done in letting those who are engaged in bath practice know, what those who are outside their circle think of its capabilities. I would simply recommend the freer internal

use of the waters in certain cases, and a return at all events tentatively to the treatment of diseases, which, if we can trust at all to written evidence, used to find relief in Bath. I do not mean that such diseases are not incidentally treated there, but they are scarcely mentioned in modern books as coming within the scope of the waters.

Much of what I have said of Bath would apply equally to the Bristol waters, if their use should come really to be revived.

CHAPTER IV.

NOTES ON SULPHATED BATHS.

Curæ vacuus hos adeas locos, ut morborum vacuus abire queas.—
A BATH INSCRIPTION.

As day by day guide books become more numerous and more adapted to the wants of all kinds of travellers, it is less necessary to give detailed accounts of baths in works on mineral waters. However, as the baths mentioned here are many of them not much known, I have jotted down my impressions about them. The chief diseases treated at those baths have been enumerated above, so that there is no occasion to mention them again in much detail. As a general rule such baths are open from May 15th to September 30th.

Contrexéville is a small old-fashioned French town in the valley of the little stream the Vaire, and is about 1000 feet above the sea. The country is not very interesting. It has been known for 120 years, but has only of late come into fashion, and been much visited by English and Americans. There are excellent hotels and bath establishments. The various waters do not differ much in their properties. They are chiefly drunk. Much activity prevails in the place, and improvements are being constantly made to meet the convenience of

visitors. There are many physicians, among whom Dr. Debout D'Estrées has done much by his writings to raise the popularity of the place. Various diseases are treated here, but there is a distinct tendency to specialisation in the treatment of diseases of the uropoietic apparatus. The place is rather dull, but amusements, as plays, and concerts, relieve its monotony. I am told that society here is during the season quite Parisian and *spirituel*. For myself as a mere visitor, I can say that I have never received as much civility and attention at any bath as I did at Contrexéville. Its waters are largely exported. It is reached by railway.

Vittel, only known within the last few years, is four miles from Contrexéville along the Vaire. The bathing establishment and park are away from the little town, and are really very pretty. The affections treated here are much the same as those at Contrexéville. But the waters are a little more varied, on the whole drunk in smaller quantities than those of the former, and stronger and more laxative, and therefore give scope for treating a greater variety of diseases. *Vittel*, however, has by no means attained the popularity of Contrexéville. It appears to have a very intelligent doctor in Dr. Bouloumie. There are various amusements for the visitors. The waters are exported. It is reached by railway.

Visitors at both places talk enthusiastically about drives and excursions in the neighbourhood. To my

eye the country is not very attractive round either of them. The baths both of Plombières and of Luxeuil deserve a visit, and like Dom-Remy are reached by railway. The Vosges mountains are not far off, and a visit to them and to such places as Remiremont, or to Gerardmer higher up, at an elevation of about 2000 feet, on its beautiful mere, makes a pleasant after-cure, and one very easily made. Gerardmer is largely resorted to by the French, and not crowded with English as most places in Switzerland usually are. A road wanders upwards through forest, past lakelets, to the Col of the Schlucht, nearly 4000 feet high, whence there is a fine descent on the valley of the Rhine.

Bagnères de Bigorre used by the Romans, is an old bath of long-established reputation. It lies on one of the outer ridges of the Pyrenees at a height of 1800 feet. It has five bath establishments, and the clean town with water running along all its gutters, offers every comfort in the way of lodgings and of hotels. At one time it was much frequented by the English, and it continues to be a most desirable place. There is a large and a varied supply of mineral waters, and therefore many different affections may find relief. Among them, those which are considered the speciality of Contrexéville and Vittel, may be treated here. It is reached by rail. All the beauties of the neighbouring Campan valley, and of the Pyrenees generally, are open to those who are able to make excursions during the intervals of, or after the cure. *Eaux Bonnes*, the

pleasant French equivalent (not chemically) for the waters of Weissenburg and Lippspringe, in affections of the respiratory organs, is not far off.

The baths of *Leuk* at a height of 4500 feet, at the foot of that most picturesque of passes, the Gemmi, is a place of old renown, and much visited by strangers, that they may see one of the remnants of old bath life. Here the ladies and gentlemen spend hours together in the same bath, and eat their breakfasts on floating wooden trays. The bathing arrangements not long ago were somewhat primitive and old-fashioned; still patients may live here in comfort. They are surrounded by beautiful scenery. English do not come here much for treatment, but there is a considerable afflux of Swiss and of French patients. The treatment of skin diseases by prolonged immersion is the speciality of the place, but the complaints common at Contrexéville, Lippspringe, and Weissenburg, are also treated. Cases of incipient phthisis and bronchial catarrhs are sometimes sent here.* Latterly it has been thought that the first of these complaints is contra-indicated. There is still a drive of eight miles from the nearest station on the Rhone valley railway.

* It is worth observing, that chest affections have been for ages treated here at 4500 feet, at Penticosa in the Pyrenees at 5110 feet, at Fideris in Switzerland at 3300 feet, at Mont Dore in Auvergne the same height. This shows that elevation was not dreaded in such cases. The novelty of Davos and similar Alpine valleys consists in the winter residence at these heights, with its snow and sun and still air cure.

Weissenburg is a mere bath establishment, in a narrow, thickly wooded, very wild gorge, 2800 feet above the sea. A few years ago a handsome new establishment was provided for visitors, the old one still remaining in use. The drinking cure is the chief one. There are imperfect arrangements for inhalations, etc., of luke warm water. Notwithstanding its beauty, the place feels shut in, and is made melancholy by the number of consumptive patients about. They appeared to be Swiss chiefly. Undoubtedly amelioration in many bad cases occurs here. There are numberless hill stations among the Bernese Alps for an after cure. *Weissenburg* is still some three hours drive from Thun.

The baths of *Baden* in Aargau are among the most famous and the most ancient in Europe. A statue of Isis from the Roman times has been found there. The town is at the bottom of a valley, and built on both sides of the rushing Limmat. The town perhaps more than any other old bath, bears traces of its ancient importance, in the number and size of its old hotels and bathing houses, which must have been built to accommodate a vast number of visitors. The bath had been for some time declining in estimation, when a few years ago an immense new hotel with baths and modern arrangements, was built, and has revived its popularity. Its energetic landlord had it lighted by electricity some years ago. We have full accounts from many sources of the bath life, its luxury and dissipation at the time of the council of Constance, and indeed both before and

after it. Baden is one of the last places, where we have notices of music being played for the entertainment of those in the bath, also of the less entertaining but common practice of cupping the bathers, of both which things there are curious representations in plates of A. Dürer and others. There are many ancient baths still in existence, which date from before the period of the reformation. The waters here have always been used more for bathing than for drinking, and perhaps more in gouty than in other affections. The place is comfortable, but must be rather dull to the English, who have not yet visited it in great numbers, though there seems to be an abundant afflux of Swiss and French. Treatment is carried on in winter as well as in summer, as at our Bath. It is on the railway to, and only a few miles from, Zürich.

Although I found it convenient to examine the waters of *St. Giuliano*, as I could not go to Lucca, I cannot recommend them to the English, for they are hot in summer, lying at the foot of some hills on the other side of the plain from Pisa. But everything that has been said of the cures effected at Pisa, applies to the ancient and celebrated waters of *Lucca*. Its baths are situated in a beautiful wooded valley, but unfortunately at an elevation of only 350 feet. For English such a situation is much too hot in summer, though it is a desirable place to visit before the great heat of that season. This is much to be regretted, as it is a very comfortable place, and living is moderate. Montaigne's sketch of life

here is well known, and the baths are still a favourite resort of Italians. Many diseases find relief here. Its waters are used more for bathing than for drinking. It is a drive of fifteen miles from the city of Lucca.

The waters of *Albula* do not come strictly among those treated of here, owing to their considerable amount of sulphuretted hydrogen, but I must just mention them, because they are among the most abundant in the world, and were well known to the Romans before the Empire, and called "the most sacred." Ennius mentioned the *Albula*, "*Intus in occulto massat*," and Martial said, "*Canaque sulfureis Albula fumat aquis*," which shows that its physical characteristics were the same then as now. We know that in the earliest times it was used for gravel. But since the days when the neighbourhood was studded with villas, vegetation has disappeared, and the place is sterile and unhealthy. Nevertheless some six years ago new baths were opened which are resorted to by the Romans, who go out to bathe in them, and return by the Tivoli tramway.

Lippsprunge in Westphalia came into notice about fifty years ago. It lies in an uninteresting country, and has a tolerably equable moistish climate. To me it seemed to have little to recommend it; there is a bath establishment with colonnades and inhaling rooms. The treatment consists partly in drinking the weak water, partly in inhaling the nitrogen, which is abundant in the water. The place is scarcely visited at all by English, nor do I advise them to go there. It is now resorted

to only for chest complaints, and it must require all the energy of such a man as Dr. Rohden to make it at all popular among Germans.

It is a four miles drive from Paderborn on the railway. The neighbouring *Inselbad* is similar, used chiefly for inhalations, and is poorly frequented.

I shall not pretend to add anything to the numerous accounts of *Bath* already in existence. The place is too generally known to require any fresh notice, and the diseases treated there have been fully enumerated. I hear it called hot and relaxing. It is surrounded by hills, and no doubt has not the climate of Malvern or of Ilfracombe, to take two other stations in the West of England; still I like Bath for itself in spite of its hills, and I am glad to hear of the renewed prosperity of its waters. Perhaps the present generation has forgotten the old encomium of it by Dr. Cheyne in 1753, I therefore venture to quote it, adding that Bath may suit many people besides "the weak and tender" to whom he recommended it. "If any one would know the fittest place in Britain to spend their lifetime with the greatest ease and pleasure; take all the advantages of the place together, the agreeableness of the waters to the stomach; the certainty of them producing a good appetite, when it fails; and the no less certain consequence thereon, freedom and cheerfulness of spirits; the regular way of living; the excellency of provisions; the warmth, neatness and cleanliness of the housing; the conveniency of the free fresh and open air of the

neighbouring downs for exercise; the easiness of the amusements; and the advantage of what conversation one desires. I say taking all these advantages together, I can affirm from near twenty years experience, without suspicion of flattery or fear of contradiction, that Bath is the place." This remains true in its essentials, although Bath has become rather more of a city.

In bidding farewell to Bath and to its remarkable Roman remains, I beg to salute its fountains in a couple of lines, which will be amusing to local antiquaries. I have ventured to substitute the word Sulis for that of Divona in the original:—

Salve urbis genius, medico potabilis haustu,
Sulis, Celtarum linguâ, fons addite Divis.

The *Bristol* waters furnish a not-a-little curious chapter in the history of mineral waters. The Hot wells rise from the bed of the Avon at the foot of the St. Vincent rocks, below the highest tide mark. They have a temperature of 70° to 76°, and must be classed as weak lime waters, the carbonate preponderating over the sulphate. They yield from 2,000 to 3,000 gallons per hour. The water is clear, pure, sparkling and rather pleasant to the taste, owing to the presence of a good deal of carbonic acid. The latest analysis, however, show less of that gas, than was to be expected. These waters were coming into favour in 1650, and there prosperity lasted for more than 150 years. We have already seen that they were the Vichy, or Contrexéville, or Wildungen of the day, in their popularity in gravel and diabetes.

They were also the Eaux Bonnes, the Mont Dore, the Weissenburg and the Lippspringe in affections of the chest. For many years, however, the Hot wells though not quite abandoned, have been used but little, and their old glory is gone. For accounts of its prosperous days we must go back to Smollett, Miss Burney, and the old novelists. The climate of Clifton has, however, never fallen into disfavour, and has always attracted a certain number of patients with pulmonary complaints, and Clifton downs are just above the wells.

The idea has been frequently entertained of late, of endeavouring to restore the popularity of the old wells, but nothing has as yet been practically effected. To carry out such a plan, the two most necessary measures seem to be, to have the wells entirely protected from the tide, and to have their waters pumped up with as little loss of heat as possible to the top of the bank, for patients will always prefer to drink the water without having to ascend 200 feet or more, after their potations. Is there any probability of success in an attempt to restore the waters? It is hard to say. But the remarkable healthiness of Clifton is in its favour, and a great deal will depend on the management of the waters, on the arrangements made for the local treatment of the fauces and larynx, on assiduous advertising, and not-a-little on fashion. There is no reason, particularly when we look back to the past, why the scheme may not succeed, when we recollect that Evian, which is cold, and has a feebler mineralisation than the Hot wells, is

considered to be a good substitute in vesical affections, for Vichy and Contrexéville, and that lime-waters, like Lippspringe and Weissenburg, one a little warmer and one a little colder than the Hot wells, neither to my mind very attractive, enjoy a reputation in pulmonary complaints.

One need scarcely suggest after cure places, till the cures are brought into operation, especially amidst localities so well known to choose from as those near Bristol. But I fear that in these days one can no longer prescribe a goats' whey cure at Abergavenny, although goats' and asses' milk were important elements of the old treatment.*

Though they do not come strictly under the head of sulphated, I may be allowed to say a few words about some earthy carbonated waters, of which the analysis has been given above, p. 9.

Wildungen in Waldeck not very far from Cassel, may be called the northern rival of Contrexéville. It is situated in a fine open country with bracing air, and some wooded hills near it. There is a considerable variety of wells, including some with a good supply of iron, and therefore, there is no reason why attention should be so exclusively directed to renal and vesical cases. Indeed, as carbonate of soda is believed to have a solvent power in biliary calculus, and as its Helenen and Thale wells have a fair amount of that salt, these waters

* I have to thank Dr. Michell Clarke for supplying me with the latest information about the Hot wells.

ought to be as efficacious as those of Contrexéville. There are excellent drinking and bathing arrangements, and a great many doctors attracted by the special practice of the place. English go there as well as Germans, and I met an American who crossed the sea every year for his visit to Wildungen. Hoffmann, 150 years ago, pointed out the analogy of some of its waters to those of Tönnistein. The waters generally are pleasant to the taste and are largely exported. There are abundant places for a *nach kur* not far off; all the beautiful spots in the Thüringian forest, as Eisenach, Friedrichsrode, Schwarzburg, Ilmenau, besides Hartzburg and others in the Hartz Mountains. None of these places are visited half so much as they should be by the English. They are buried in forests, and supply rest and quiet, which after a bath cure are more desirable than long journeys and excitement. It is now reached by railway.

The *Herster* well (see p. 20) is a little way out of the well-known bath, Driburg in Westphalia. That bath lies at a height of 660 feet, but cannot be called an interesting place, though it has many excellent iron wells, resorted to mostly by German ladies. The *Herster* well contains with a little iron, a good supply of lime and a large one of carbonic acid. It is used for the same purposes as the Wildungen waters and is exported. Driburg is on the railway.

Tönnistein.—I had long wished that the waters of this place should be better known in England, before I had observed that Hoffmann (1700) called it “the most noted

spring in all Germany." The waters are delicious, and have long been exported. They arise at the upper end of the Brohl valley, on the way from the Rhine to the Laacher See, at the mouth of a picturesque gorge of white tuffa. It is to be regretted that attempts at forming an establishment here have been, so far as I know, unsuccessful. The Germans use the water both in bronchial and laryngeal, and in vesical catarrhs.

Although it is usually counted an iron spring, I notice *Rippoldsau* here, as Durand Fardel has called it a carbonated sulphate. It has a large supply of bicarbonate of lime and of sulphate of soda, with much carbonic acid, and has long been famous in the treatment of affections in which iron is administered, and among other things for its use in catarrhs of the bladder and in gravel. *Rippoldsau* lies in the Black Forest at a height of 1700 or 1800 feet among pine wood. It has several springs and very comfortable arrangements. Life is quiet here, but very pleasant, if the season is not rainy. The waters are exported, and pastilles are made of their solid contents.

Rippoldsau is one of the group of *Kniebis* baths, which resemble each other much in their properties. *Griesbach* (a lady's bath) and *Petersthal* are the two most important of them. These wells were better known in Europe 250 years ago than they are now, in fact were most important baths in those days. They deserve to be recommended. They are conveniently near it, if Switzerland is thought of for an after cure,

although for that matter the Black Forest itself is full of delightful resting places. The Kniebis baths are all a little off the railway, Rippoldsau being a twelve miles drive from Wolfach the nearest station.

For those who may be advised to go abroad to any of the waters which we have been discussing, I would add a few words. Scarcely any of those stations, except those which at present have a reputation for the treatment of special diseases, enjoy very extended popularity, or have many English visitors. I do not know that the "fine tone" of which some Germans write as prevailing among crowned heads at Gastein, is to be found at many of them, still less are the amusement and excitement of Homburg. But at all of them there are sufficient bath establishments and comfortable hotels or lodgings, such as should satisfy the requirements of those who are not very fastidious. I have already said that many of the complaints for which patients are sent abroad to Lime waters, could be treated just as well at Bath, and there is no good reason why eventually such cases might not be treated at that place, when it is desirable that they should remain in England. But no doubt the more complete change of life and habits to be procured by going abroad, is an element to be considered, in determining the choice of place.

In parting with my readers, who may possibly think that too large a share of these pages has been devoted to the past, I would say that this has been neces-

sary for the purpose of my argument. The history of the past in this instance is the best preventive against the acceptance of extravagant, while it supports the reasonableness of just, claims. My endeavour has been to judge of the past by our present knowledge, or as Ovid says,

“*Laudamus veteres, sed nostris utimur annis.*”

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